

ANNUAL WATER QUALITY REPORT

Reporting Year 2021



Presented By
Bristol Water Department



We've Come a Long Way

Once again, we are proud to present our annual water quality report covering the period between January 1 and December 31, 2021. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at all hours—to deliver the highest-quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

Source Water Assessment

In 2003 a source water assessment was completed by the Department of Public Health, Drinking Water Division. The updated assessment report can be found on the Department of Public Health website at dir.ct.gov/dph/Water/SWAP/Community/CT0170011.pdf. The assessment found that the Bristol reservoir system has a rating of low susceptibility and the well fields have a rating of high susceptibility. Specifics are available in the assessment report.

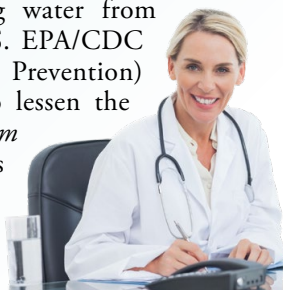


Important Health Information

Sources of lead in drinking water include corrosion of household plumbing systems and erosion of natural deposits. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Sources of copper in drinking water include corrosion of household plumbing systems, erosion of natural deposits, and leaching from wood preservatives. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.



Chairperson's Report 2022

With what we all hope is the worst of the pandemic behind us, now is the time to look to the applicable lessons and experience gained and fully integrate them into the operations and culture of the Bristol Water and Sewer Department. Changes, large and small, have been instituted with judicious consideration that will provide continuing value to our customers, improve methods to safeguard our overall system, and allow confident continuity of operations during any future challenges.

Recognizing the continuing need to be vigilant in the protection of our customers' and employees' health while also maintaining overall operational integrity, we constantly look for opportunities to improve while keeping our cost of services in line with local and industry standards. Our service and repair staff take the utmost in personal protection measures when visiting customers, and the courteous and capable staff in our main office provide effective account solutions in a safe in-person setting.

The cost of goods and services is on all our minds. One of the department's guiding principles is to ensure equitable and understandable charges to customers. These funds underpin the safe delivery of drinking water and healthful disposal of wastewater. They also support the sustainability of our complex delivery and disposal systems, the many miles of piping to convey them, and the professionally trained and certified staff to operate and maintain them. We are ever mindful to balance the value and cost of all our services.

We go into this new year with the belief that the experiences of the past two years have strengthened us all in many ways. Every employee of the Bristol Water and Sewer Department takes great pride in providing essential resources that sustain our wonderful city. We thank you for the support and understanding during these extraordinary times and look forward to hearing any of your insights on furthering our value to you.

Thank you.

The Bristol Water and Sewer Board of Commissioners

QUESTIONS? For more information about this report, or for any questions relating to your drinking water, please call Superintendent Robert Longo at (860) 582-7431.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Where Does My Water Come From?

The Bristol Water and Sewer Department has supplied the City of Bristol with high-quality drinking water since the early 1900s. The Bristol Water Department has accomplished this by making major investments in the supply, treatment, and distribution facilities needed to operate a sophisticated water system.

The Bristol watershed is comprised of six contributing reservoir areas. Reservoirs in the towns of Burlington, Harwinton, Plymouth, and Bristol are channeled through the Poland River

to transmission mains leading to the water treatment plant, where it is treated and sent into the distribution system and storage facilities. Along with the reservoir system, we have five gravel-packed wells, which provide water to the distribution system's low-service area, and an interconnection with the City of New Britain Water

Department to supplement the Stevens Street area.

In 2020 the Bristol Water Department produced a total of 2.55 billion gallons of water, or approximately 5.62 million gallons per day. On June 25, 2020, we produced 10,170,240 gallons of water, which was the highest production day of the year.

Source Water Protection

The Bristol Water and Sewer Department is always working to protect our water sources. Each year, our watershed division inspects all septic systems in the vicinity of our reservoirs to ensure that they are not failing, which could cause contamination to our water sources. The Bristol Water Department also constantly monitors the sanitary radius around all wells and works with land-use officials to review any new construction in the source water areas, as required by the Aquifer Protection Act, to ensure that future contamination does not occur.

“
When the well is dry, we
know the worth of water.
”

—Benjamin Franklin

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.

Table Talk

Get the most out of the Testing Results data table with this simple suggestion. In less than a minute, you will know all there is to know about your water:

For each substance listed, compare the value in the Amount Detected column against the value in the MCL (or AL, SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.

Other Table Information Worth Noting

Verify that there were no violations of the state and/or federal standards in the Violation column. If there was a violation, you will see a detailed description of the event in this report.

If there is an ND or a less-than symbol (<), that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).

The Range column displays the lowest and highest sample readings. If there is an NA showing, that means only a single sample was taken to test for the substance (assuming there is a reported value in the Amount Detected column).

If there is sufficient evidence to indicate from where the substance originates, it will be listed under Typical Source.



BY THE NUMBERS

The number of Americans who receive water from a public water system.

300
MILLION

1
MILLION

The number of miles of drinking water distribution mains in the U.S.

The number of gallons of water produced daily by public water systems in the U.S.

34
BILLION

135
BILLION

The amount of money spent annually on maintaining the public water infrastructure in the U.S.

The number of active public water systems in the U.S.

151
THOUSAND

199
THOUSAND

The number of highly trained and licensed water professionals serving in the U.S.

The age in years of the world's oldest water, found in a mine at a depth of nearly two miles.

2
BILLION

Safeguard Your Drinking Water

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain it to reduce leaching to water sources, or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use U.S. EPA's Adopt Your Watershed to locate groups in your community.
- Organize a storm drain stenciling project with others in your neighborhood. Stencil a message next to the street drain reminding people "Dump No Waste – Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Water Conservation Tips

You can play a role in conserving water and save yourself money in the process by becoming conscious of the amount of water your household is using and looking for ways to use less whenever you can. It's not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water-using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

Community Participation

You are invited to attend our Water and Sewer Board Meetings. We meet the third Tuesday of each month beginning at 6:00 p.m. for the Sewer Commission and 6:15 p.m. for the Water Commission at the water treatment plant, 1080 Terryville Avenue, Bristol. We are also now on Facebook! By liking us on Facebook or signing up for email notifications at bristolwaterdept.org, you can get up-to-date information on hydrant flushing, water main breaks, special meetings, and more.



Think Before You Flush!

Flushing unused or expired medicines can be harmful to your drinking water. Properly disposing of unused or expired medication helps protect you and the environment. Keep medications out of our waterways by disposing responsibly. To find a convenient drop-off location inside the Bristol Police Department lobby.

Water Treatment Process

The treatment process consists of a series of steps. First, raw water is drawn from our reservoir and pumped into the water treatment plant, where it enters a large mixing chamber. Here, we add powdered activated carbon to improve taste and odor. We also add PCH-180 (a type of liquid aluminum sulfate), which causes small particles to adhere to one another, forming floc. The water then goes through three flocculators, which slowly mix the water and bring all the suspended particles (floc) into the sedimentation tanks, where the floc slowly settles to the bottom and is removed as sludge. The water is then filtered through layers of a mixed-media filtering system. As smaller suspended particles are removed, turbidity disappears and clear water emerges. The water then goes into a clear well, where chlorine, fluoride, caustic soda, and phosphate are added before it's sent to your home.



What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals used worldwide since the 1950s to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. During production and use, PFAS can migrate into the soil, water, and air. Most PFAS do not break down; they remain in the environment, ultimately finding their way into drinking water. Because of their widespread use and their persistence in the environment, PFAS are found all over the world at low levels. Some PFAS can build up in people and animals with repeated exposure over time.

The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). PFOA and PFOS have been phased out of production and use in the United States, but other countries may still manufacture and use them.

Some products that may contain PFAS include:

- Some grease-resistant paper, fast food containers/wrappers, microwave popcorn bags, pizza boxes
- Nonstick cookware
- Stain-resistant coatings used on carpets, upholstery, and other fabrics
- Water-resistant clothing
- Personal care products (shampoo, dental floss) and cosmetics (nail polish, eye makeup)
- Cleaning products
- Paints, varnishes, and sealants

Even though recent efforts to remove PFAS have reduced the likelihood of exposure, some products may still contain them. If you have questions or concerns about products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772. For a more detailed discussion on PFAS, please visit <https://www.atsdr.cdc.gov/pfas/index.html>.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2021	2	2	0.26	0.018–0.26	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2021	[4]	[4]	1.6	0.8–1.6	No	Water additive used to control microbes
Fluoride (ppm)	2021	4	4	0.83	0.51–0.83	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2021	60	NA	35	0.06–44	No	By-product of drinking water disinfection
Nitrate (ppm)	2021	10	10	1.40	0.071–1.40	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Total Organic Carbon (ppm)	2021	TT ¹	NA	1.87	1.07–1.87	No	Naturally present in the environment
TTHMs [total trihalomethanes]–Stage 2 ² (ppb)	2021	80	NA	46	24–90	No	By-product of drinking water disinfection
Turbidity ³ (NTU)	2021	TT	NA	0.21	0.02–0.21	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2021	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff
Tap water samples were collected for lead and copper analyses from sample sites throughout the community							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2020	1.3	1.3	0.27	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2020	15	0	8.9	1/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2020	250	NA	77	23–77	No	Runoff/leaching from natural deposits

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromochloroacetic Acid (ppb)	2020	3	ND–0.3	By-product of drinking water disinfection
Bromodichloroacetic Acid (ppb)	2020	3.5	ND–3.5	By-product of drinking water disinfection
Chlorodibromoacetic Acid (ppb)	2020	0.4	ND–0.4	By-product of drinking water disinfection
Dichloroacetic Acid (ppb)	2020	20.6	1.8–20.6	By-product of drinking water disinfection
HAA6Br (ppb)	2020	7.3	0.5–7.3	By-product of drinking water disinfection
HAA9 (ppb)	2020	55	4.9–55	By-product of drinking water disinfection
Manganese (ppm)	2020	0.078	0.002–0.078	Erosion of natural deposits
Monobromoacetic Acid (ppb)	2020	0.5	ND–0.5	By-product of drinking water disinfection
Monochloroacetic Acid (ppb)	2020	2.6	ND–2.6	By-product of drinking water disinfection
Sodium (ppm)	2020	57.2	14.4–57.2	NA

¹ The value reported under Amount Detected for TOC is the lowest ratio between percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

² MCL is based on a quarterly average.

³ Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable.

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

SMCL (Secondary Maximum Contaminant Level): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

